ORDER NO. TQD94126093C1
G-4

Service Manual

Black and White Video Monitor

TR-990C

Chassis No. TMS1
Main Manual

⚠ WARNING

This service literature is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service literature by anyone else could result in serious injury or death.

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Panasonic®

Specifications are subject to change without notice.

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THIS MODEL COMPLIES WITH DHHS RULES 21 CFR SUBCHAPTER J APPLICABLE AT DATE OF MANUF ACTURE.

IMPORTANT SAFETY NOTICE

There are special components used in this Video monitors sets which are important for safety. These parts are shaded on the schematic diagram and on the replacement parts list. It is essential that these critical parts should be replaced with manufacture's specified parts to prevent X-RADIATION, shock, fire, or other hazards. Do not modify the original design without permission of Panasonic Industrial Company.

ABBREVIATIONS USED IN THIS MANUAL

ABL	Automatic Beam Limiter	**CRT**	Cathode Ray Tube
APF	Active Power Filter	**DY**	Deflection Yoke
AVR	Automatic Voltage Regulator	**FBT**	Flyback Transformer

SAFETY PRECAUTIONS

GENERAL GUIDELINES

1. It is advisable to insert an isolation transformer in the power line and AC supply before servicing a hot chassis.
2. When servicing, observe the original lead dress, especially the lead dress in the high voltage circuits. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
3. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers, shields, and isolation R-C combinations, are properly installed.
4. Before turning the monitor on, measure the resistance between B+ line and chassis ground. Connect ⊖ side of an ohmmeter to the B+ lines, and ⊕ side to chassis ground. Each line should have more resistance than specified below.

B+ Line	Minimum Resistance
+12.5V	34.5Ω

5. When the monitor is not to be used for a long period of time, unplug the power cord from the AC outlet.
6. Potentials, as high as 11.0 kV are present when this monitor is in operation. Operation of the monitor without the rear cover involves the danger of a shock hazard from the monitor power supply. Servicing should not be attempted by anyone who is not throughly familier with the precautions necessary when working on high voltage equipment. Always discharge the anode of the picture tube to the monitor chassis before handling the tube.
7. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

LEAKAGE CURRENT COLD CHECK

1. Unplug the AC cord and connect a jumper between the two prongs on the plug.
2. Turn on the monitor's power switch.
3. Measure the resistance value, with an ohmmeter, between the jumpered AC plug and each exposed metallic part on the monitor, such as screwheads, connector, control shafts, handle bracket, etc.
   When the exposed metallic part has a return path to the chassis, the reading should be 1MΩ minimum.
   When the exposed metal does not have a return path to the chassis, the reading must be ∞.

LEAKAGE CURRENT HOT CHECK (See figure 1.)

1. Plug the AC cord directly into the AC outlet. DO NOT use an isolation transformer during this check.
2. Connect a 1.5 kΩ , 10 watts resistor, in parallel with a 0.15μ F capacitor, between each exposed metallic part on the set and a good earth such as a water pipe, as shown in figure 1.
3. Use an AC voltmeter, with 1000 ohms/volt or more sensitivity, to measure the potential across the resistor.
4. Check each exposed metallic part, and measure the voltage at each point.
5. Reverse the AC plug in the AC outlet and repeat each of the above measurements.
6. The potential at any point should not exceed 0.75 volts RMS, A leakage current tester (Simpson Model 229 or equivalent) may be used to make the hot check. Leakage current must not exceed 1/2 milliamp. In case a measurement is outside of the limits specified, there is a possibility of a sock hazard, and the monitor should be repaired and rechecked before it is returned to the customer.

Hot-Check Circuit

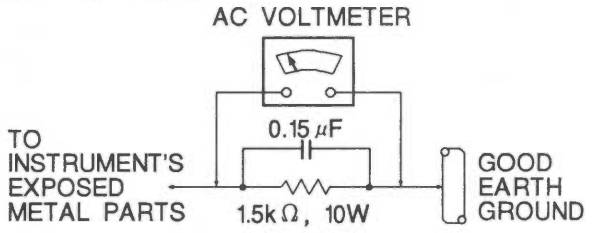


Figure 1

X-RADIATION

WARNING: 1. The potential source of X-Radiation in monitors is the High Voltage section and the picture tube.
2. When using a picture tube test jig for service, make sure that the jig is capable of handling 13.0 kV without causing X-Radiation.

Note: It is important to use an accurate, periodically calibrated high voltage meter.

1. Turn Bright and Contrast controls fully counterclockwise.
2. Measure the high voltage. The high voltage meter (electrostatic type) reading should indicate 11.0 kV ± 1.0 kV. If the meter indication is out of tolerance, immediate service and correction is required to prevent the possibility of premature component failure.
3. To prevent an X-Radiation possibility, it is essential to use the specified picture tube.

HORIZONTAL OSC. DISABLE CIRCUIT TEST

SERVICE WARNING: This test must be made as a final check before the monitor is returned to the customer after repairs are made.

1. Withe rear cabinet removed, supply nominal 120V AC to set and turn on power switch.
2. Adjust customer controls to normal position.
3. Short collector and emitter of Q801 on main PCB with a jumper wire.
   Confirm that the picture tube screen blacks out (horizontal oscillation stops).
4. If the test fails, Horizontal Oscillator Disable Circuit is not operating and must be repaired. Refer to the Horizontal Oscillator Disable Circuit Repair Procedure.

HORIZONTAL OSC. DISABLE CIRCUIT REPAIR PROCEDURE

1. With the collector and the emitter of Q801 shorted by a jumper wire, connect a DC voltmeter between the anode of D506 and chassis ground. If more than 0.7V is not present on the anode of D506, find the cause. Check D506, R517 and C520.
2. Connect a DC voltmeter between the base of Q504 and chassis ground. If more than 0.7V is not present on the base of Q504, find the cause. Check R551.
3. If more than 0.7V is present on the base of Q504, find the cause. Check Q504.
4. Carefully check above specified parts, and related circuits and parts. When the circuit is repaired, try the horizontal oscillator disable circuit test again.

SPECIFICATIONS

Power Source:	120V, 60 Hz (AVR 120V ± 10 %)
Power Consumption:	28 Watts (Average)
Picture Tube:	9 inches, 90° deflection
Video Input/Output Impedance:	75Ω or high impedance
Video Input/Output Level:	1.0Vp-p (Composite)
Resolution:	Vertical: More than 350 Horizontal: More than 700 (Horizontal at center)
Semiconductors:	14 transistor 12 Diodes 2 ICs
Anode Voltage:	11 kV ± 1 kV (at zero bean current)
Picture Linearity:	Vertical: Better than 7% Horizontal: Better than 10%
Operating Ambient Temperature:	32°F ~ 104°F (0°C ~ +40°C)
Operating Ambient Humidity:	20%~ 80%
Dimensions: (H× W× D):	$8\frac{21}{32}\times 8\frac{23}{32}\times 9\frac{13}{16}$ inch (220× 221× 249 mm)
Weight:	11 lbs (5.0 kg)

OPERATING INSTRUCTIONS

LOCATIONS

[FRONT VIEW]

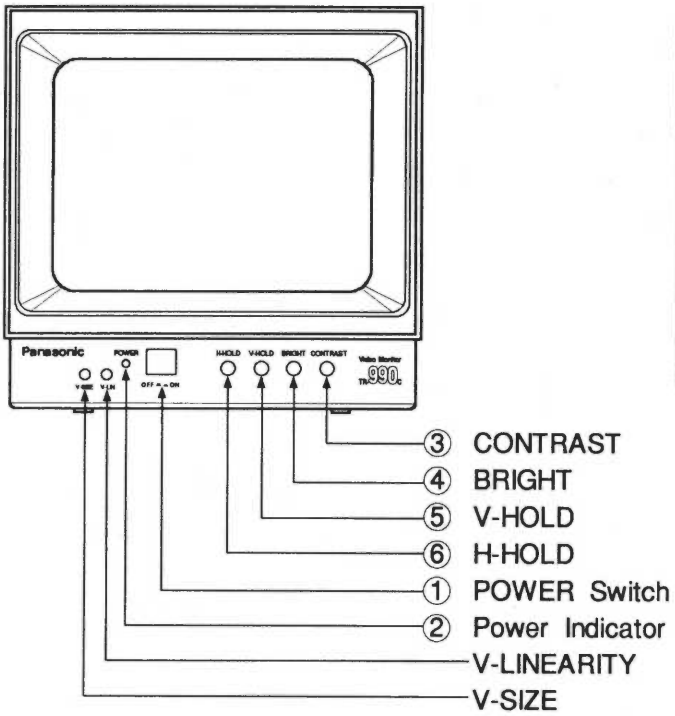


Figure 2

[BACK VIEW]

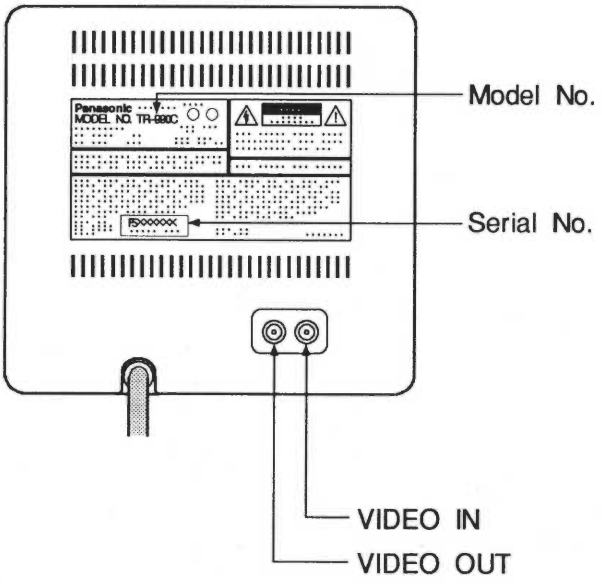


Figure 3

OPERATIONS

① **POWER Switch**	Push the "Power" switch knob to turn the monitor on. Power indicator ② will light. Push the knob again to turn the monitor off. Off On
② **Power Indicator**	The Power Indicator will light when the monitor is turned on.
③ **CONTRAST Control**	Adjust the contrast level for proper overall contrast.
④ **BRIGHT Control**	Adjust brightness level for proper overall picture brightness.
⑤ **V-HOLD Control**	Adjust the V-Hold control if the picture rolls up or down.
⑥ **H-HOLD Control**	Adjust the Horizontal Hold until the picture is stabilized, if the picture slips to either side, or appears as a series of horizontal stripes.

CONNECTIONS

Terminals on Rear Cover

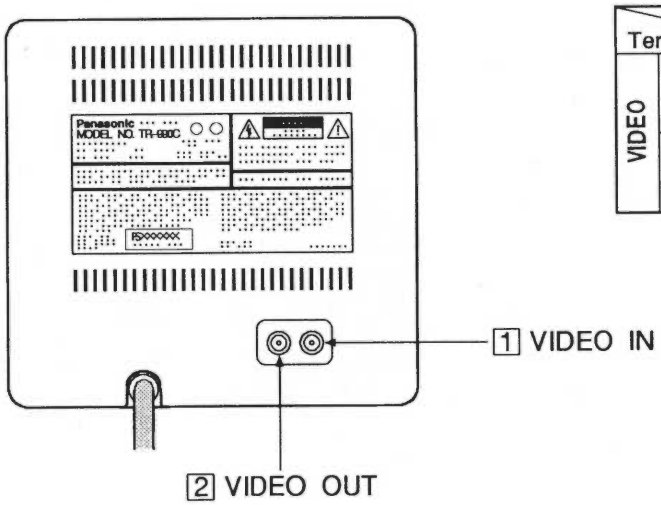


Figure 4

Signal Level and Terminal Impedance

Terminal \ Item		Level	Impedance	Remarks
VIDEO	INPUT	1 Vp-p	Auto 75Ω /High	Video signal includes sync signal.
	OUTPUT	1 Vp-p	Auto 75Ω /High	

Note: The video input/output terminals are equipped with "Automatic Termination Switch". If only input signal is applied, they are terminated by 75 ohm, and if both input/output signals applied, they are opened to high impedance.

1 VIDEO IN Terminal	Receives a video signal from outside source. This signal is available at the VIDEO OUT (Throughout) terminal.
2 VIDEO OUT Terminal	VIDEO IN signal is available at this terminal (Throughout).

DISSASSEMBLY INSTRUCTIONS

REAR CABINET REMOVAL

1. Remove 5 screws Ⓐ and take rear cabinet off.

Figure 5

MAIN PCB (A-Board) REMOVAL

1. Discharge the CRT anode to the ground and disconnect the anode leas from the CRT.
2. Disconnect the CN501, CN802.
3. Remove the ground wire terminal Ⓑ.
4. Remove the Main chassis screws Ⓒ , Ⓓ.
5. Pull A-Board completely out of the cabinet.

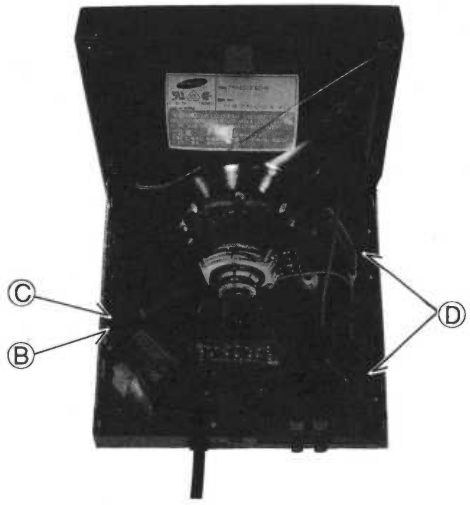


Figure 6

ADJUSTMENTS

CHECK B+ VOLTAGE

1. Power on (Without any signal input).
2 Test the collector of Q801 by meter and ensure that the voltage of B+ maintain at 12.5 V± 0.5 V.

FREERUN ADJUSTMENT

1. This adjustment should be taken in one to five minutes aften SW-on.
2. Without apply any signal.
3. Clip the signal-connector (red wire) of DY to frequency counter.
4. Fixed VR501 (H-Hold VR) at its center.
5 Adjust VR515 (H-preset) so that frequency keep to EIA: 15400± 50 Hz.

SUB-BRIGHT CONTROL ADJUSTMENT

1. Apply the pattern of Mono scope signal generator.
2. Rotate VR401 (V-Hold VR) until the picture vertically hold on.
3. Adjust VR301 Contrast VR to the minimum and approach VR302 (Bright VR) at 12-o'clock.
4. Adjust VR602 (Sub-Bright VR) so that the raster will just appear.

YOKE POSITION

The yoke is secured to the neck of the Picture tube with a clamp and screw.
To adjust the yoke and correct for picture tilt, loosen this clamp. Correct tilt and retighten the screw.

CENTERING

The picture centering device consists of two rings located at the rear of the yoke assembly.
Each ring has a tab for ease of adjustment. The tabs should be rotated and picture is properly centered on the screen of the picture tube.

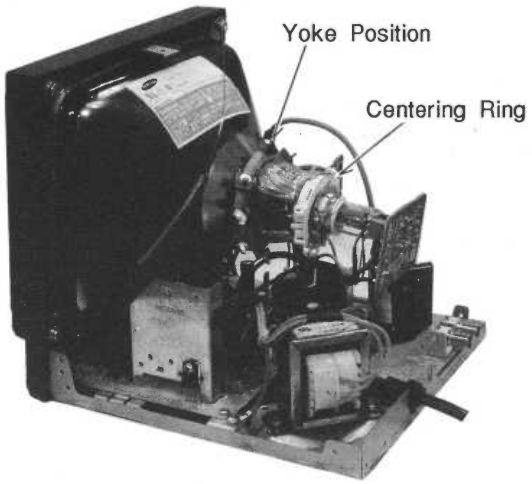


Figure 7

VERTICAL SIZE AND VERTICAL LINEARITY

V-Size (VR408) and V-Lin (VR412) controls should be adjusted simultaneously to give proper vertical size consistent with good vertical linearity.

FOCUS

Set contrast and brightness controls to 12-o'clock.
Adjust focus control VR601 to obtain the sharpest and cleareast picture.

ADJUSTMENT OF DISTORTION AND ROTATION

1. Apply the pattern of crosshatch.
2. Adjust the eight small pieces of loadstone on DY to minimize distortion and rotation.
3. After the two steps above, and YOKE position to check it any change happen. After fine adjustment, the specification is:
   a: Distortion ..... Maximan 2%
   b: Raster tilt ..... ± 1%
4 After the adjustment above, smear white lacquer on the centering magnet and the eight small pieces of loadstone.

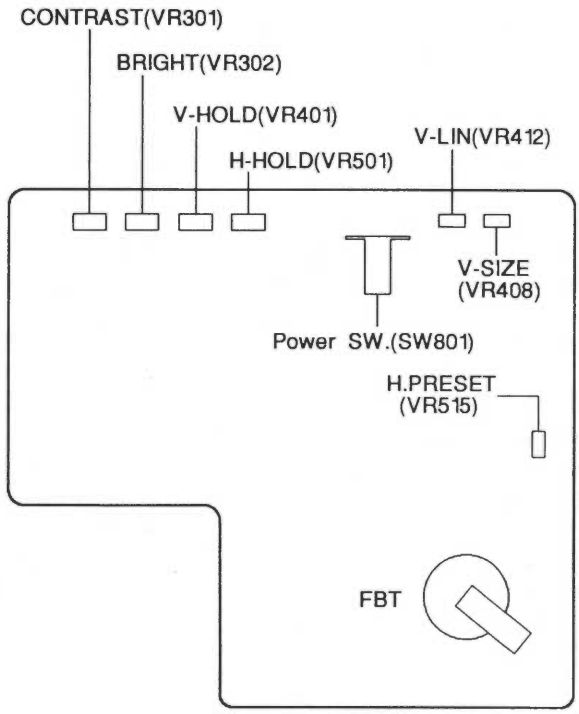


Figure 8

CIRCUIT EXPLANATION

X-RADIATION PROTECTION CIRCUIT

1. Under normal operation conditions, zener diode (D506) is Cut Off since its breakdown voltage is not reched.
2. When B+ increases and the Cathode Voltage of the diode exceeds the avalanche voltage, the zener diode (D506) conducts.
3. The conduction of D506 raises the base voltage of Q 504 causing it activated.
4. Then Q504 begins to operate and makes the base voltage of horizontal drive transistor Q503 neraly equal to zero.
5 This causes the Horizontal Oscillator Circuit to stop and reduces the high voltage to zero.

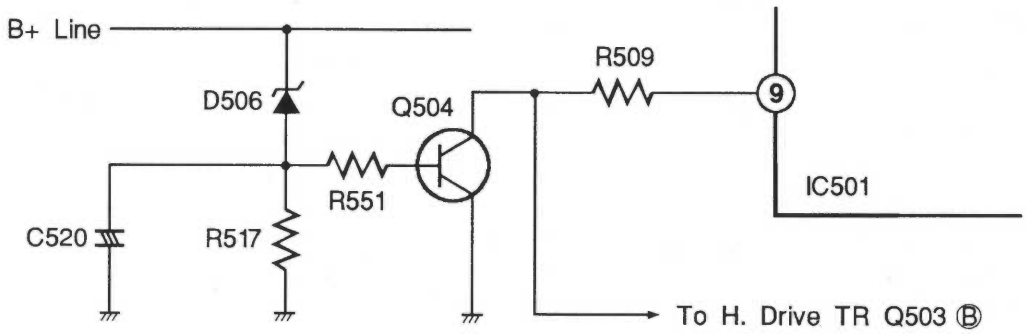
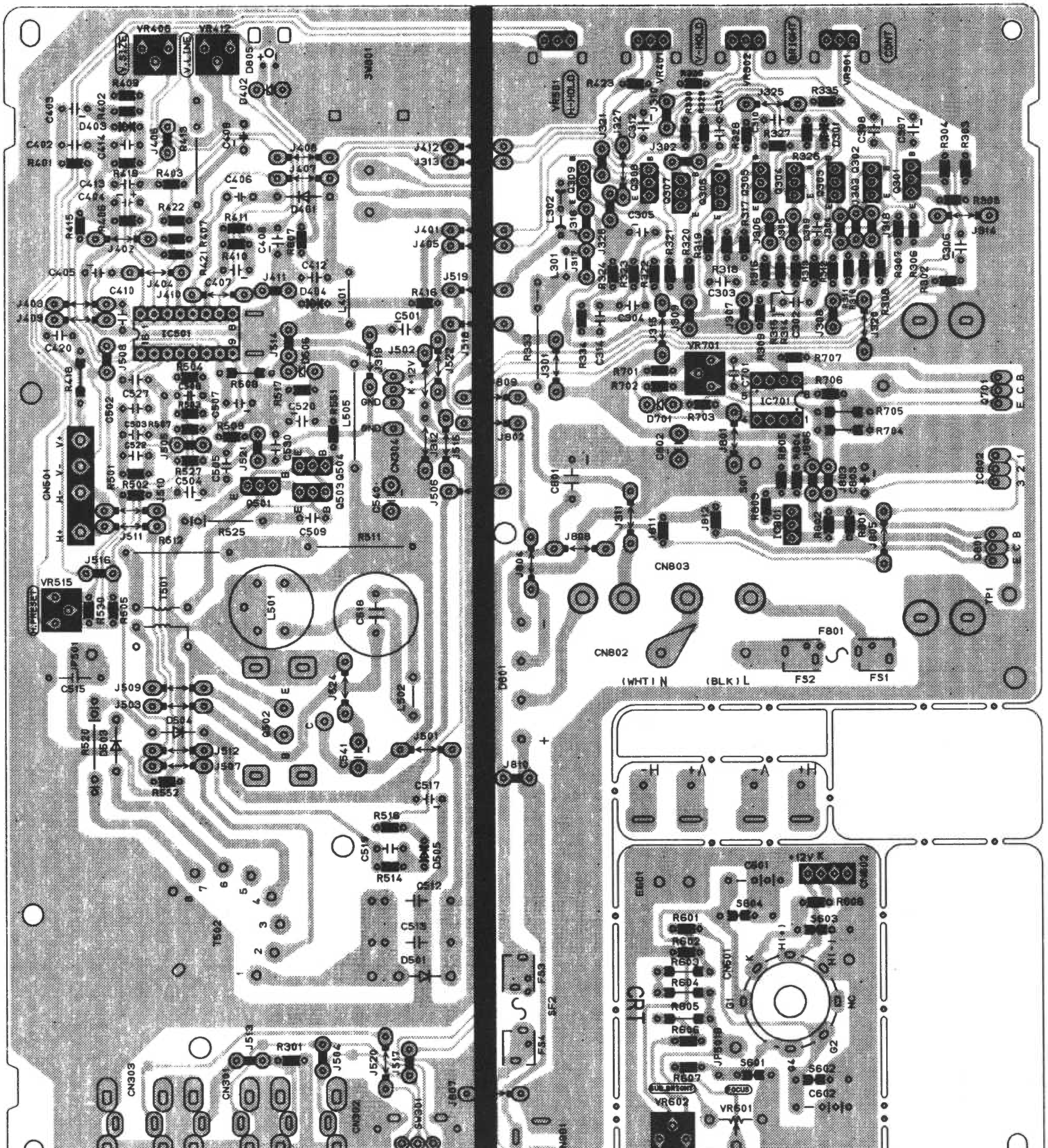


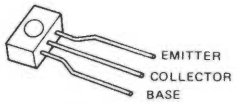
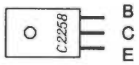
Figure 9

CONDUCTOR VIEWS

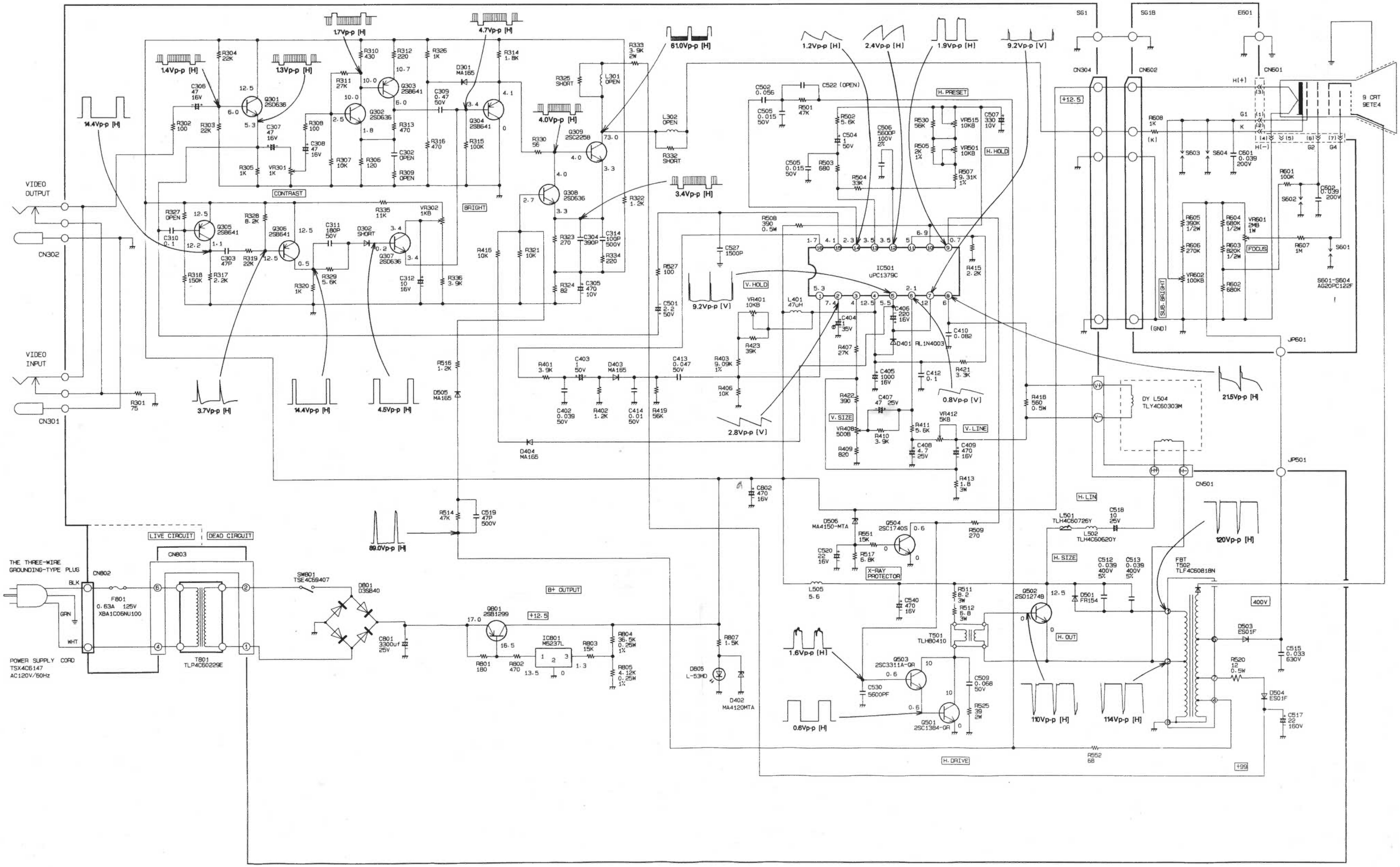


SCHEMATIC DIAGRAM FOR MODEL TR-990C CHASSIS NO. TMS1

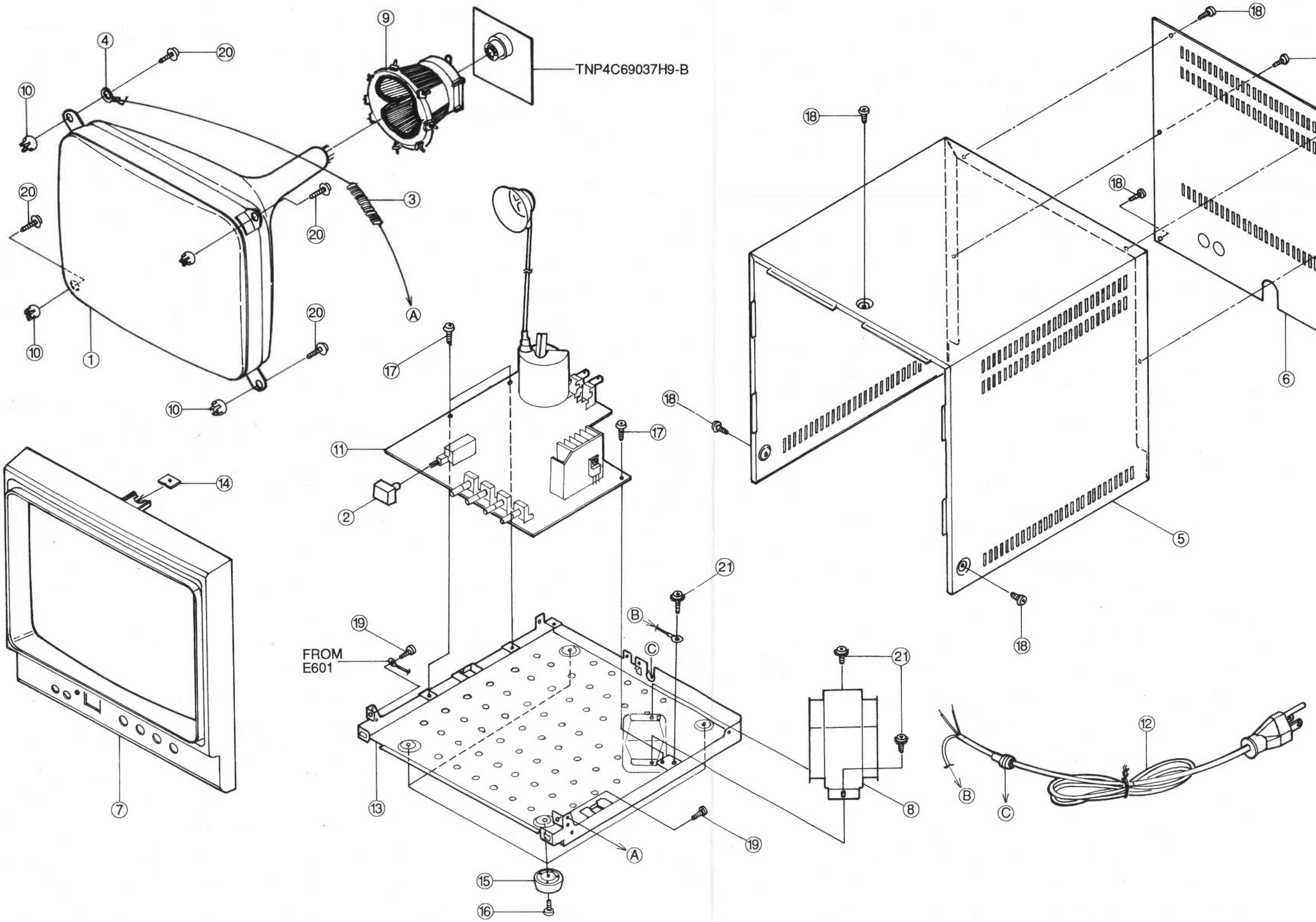
1. The features of all parts see page 12~14 parts list.
2. Voltage and waveform measurement.
3. Voltage and waveforms are measure by oscilloscope receiving a rainbow color bar signal when bright VR is set to minimum and contrast VR is set to maximum position.
4. When arrow mark (⟋) is found, connection is earily found along with the direction of an arrow.
5 This schematic diagram is the latest at the time of printing and subject to change without notice.

	2SC1740S		2SD1274B 2SB1299
	2SC1473-QNC 2SC1384-R		2SC3311A-R
	2SC2258		2SB641 2SD636

SCHEMATIC DIAGRAM FOR MODEL TR-990C/TR-990C(T)



EXPLODED VIEW



REPLACEMENT PARTS LIST

Important Safety Notice

Components identified by the international symble △ have special characteristics important for safety.
When replacing any of these components use only manufacture's specified parts.

RESISTOR

PARTNAME & DESCRIPTION			
TYPE		ALLOWANCE	
C	Carbon	F	± 1 %
F	Fuse	J	± 5 %
M	Metal Oxide	K	± 10 %
S	Solid	M	± 20 %
G	Wire Wound	G	± 2 %
V	Vaviable Res.		
T	Thick Film Chip Resistor		

Part No. Description
Example: ERDS1TJ104TD © 100 KΩ Ⓙ 1/4W

CAPACITOR

PARTNAME & DESCRIPTION			
TYPE		ALLOWANCE	
C	Ceramic	C	± 0.25 pF
E	Electrolytic	D	± 0.5 pF
P	Polyester	F	± 1 pF
S	Styrol	J	± 5 %
T	Tantalum	K	± 10 %
PP	Polypropylene	L	± 15 %
		M	± 20 %
		P	+100 % -0 %
		Z	+80 % -20 %

Part No. Description
Example: ECQM1H104JZ3M Ⓟ 0.01 uF Ⓙ 50V

REF. NO.	PART NO.	DESCRIPTION	REF NO.	PART NO.	DESCRIPTION
	CABINET & MAIN PARTS			CAPACITORS	
1 △	9ETE4	C.R.T (9")	C303	ECCR1H470JG1P	C 47 pF J 50V
△	TBM4C429A	NAME PLATE	C304	ECKR2H391KB1P	C 390 pF K 500V
2	TBX4C0023-1	SW. KNOB	C305	ECEA1AU471BT	E 470 uF 10V
3	TES4C0018-1	CRT EARTH SPRING	C306	ECEA1CU470BT	E 47 uF 16V
4	TJE81103	1P TERMINAL	C307	ECEA1CU470BT	E 47 uF 16V
5	TKA4C0002-2	UPPER CASE	C308	ECEA1CU470BT	E 47 uF 16V
6	TKC4C0002-5	REAR PLATE	C309	ECQM1H474JZBM	P 0.47 uF J 50V
7 △	TKE4C2501	FRONT CABINET PA-765A	C310	ECQM1H104JZ3M	P 0.1 uF J 50V
8 △	TLP4C60229E	POWER TRANS.	C311	ECCR1H181JG1P	C 180 pF J 50V
9 △	TLY4C60303M	DEFLECTION YOKE	C312	ECEA1EU100BT	E 10 uF 25V
10	TMM4C0049	CRT GUM	C314	ECCR2H101JG1P	C 100 pF J 500V
	TMM81416	WIRE CLAMPER	C402	ECQM1H393KZ3M	P 0.039 uF K 50V
11	TNP4C69037-22	MAINPCBASSY(W/COMPONMENTS)	C403	ECEA1HU010BT	E 1 uF 50V
	TPC4C0363C	PACKING CASE	C404	ECSF1VE105VB	T 1 uF 35V
△	TQB4C0192A	O/I	C405	ECEA1CU102ET	E 1000 uF 16V
	TQD4C0022	WARRANTY CARD	C406	ECEA1CU221BT	E 220 uF 16V
	TQD4C0023	SERVICENTER SHEET	C407	ECEA1EU470BT	E 47 uF 25V
	TQD4C0024	UL SAFETY GUIDE	C408	ECEA1HU4R7BT	E 4.7 uF 50V
	TQE4C0006	BAG (FOR O/I USE)	C409	ECEA1CU471BT	E 470 uF 16V
	TQE8593	BAG (FOR AC CORD USE)	C410	ECQM1H823KZ3M	P 0.082 uF K 50V
	TQF4C0278	CAUTION LABEL	C412	ECQM1H104JZ3M	P 0.1 uF J 50V
	TQF4C0360	UPC BAR CODE	C413	ECQM1H473JZ3M	P 0.047 uF J 50V
12 △	TSX4C6147	AC CORD SF 003, SJT	C414	ECQM1H103JZ3M	P 0.01 uF J 50V
13	TUX4C0078-1	BOTTOM PLATE	C501	ECEA1HU2R2BT	E 2.2 uF 50V
14	TUX4C0082	ESC FIXING METAL	C502	ECQM1H563JZ3M	P 0.056 uF J 50V
	TXAPD1990	CUSHION	C503	ECQM1H103JZ3M	P 0.01 uF J 50V
15	V5LA0006A4	SET LEG	C504	ECEA1HU010BT	E 1 uF 50V
	XZB48X57C05A	SET COVER	C505	ECQM1H153KZ3M	P 0.015 uF K 50V
16	XSB3+10FX	SCREW	C506	ECQP1562JZ3M	P 5600 pF J 100V
17	XTB3+8F	SCREW	C507	ECEA1AUH331B	E 330 uF 10V
18	XTB3+8FK	SCREW	C509	ECQM1H683JZ3M	P 0.068 uF J 50V
19	XTB4+12G	SCREW	C512	ECQF4393JZBM	P 0.039 uF J 400V
20	XYA4+BA20FX	SCREW	C513	ECQF4393JZBM	P 0.039 uF J 400V
21	XYA4+EF8	SCREW	C515	ECQE6333KFBM	P 0.033 uF J 630V
			C517	ECEA2CU220BT	E 22 uF 160V

REF. NO.	PART NO.	DESCRIPTION
C518	ECEA1EW100ZE	E 10 uF 25V
C519	ECCR2H470JG1P	C 47 pF J 500V
C520	ECEA1HUH220B	E 22 uF 50V
C527	ECQM1H152JZ3M	P 1500 pF J 50V
C530	ECKR1H562KB1D	C 5600 pF K 50V
C540	ECEA1HUH471E	E 470 uF 50V
C601	ECQE2393KZBM	P 0.039 uF K 200V
C602	ECQE2393KZBM	P 0.039 uF K 200V
C801	ECEA1EU332ET	E 3300 uF 25V
C802	ECEA1CU471BT	E 470 uF 16V
	DIODES	
D301	MA165TA5VT	DIODE
D401	1N4003TB26	DIODE
D402	MA4120MTA	DIODE
D403	MA165TA5VT	DIODE
D404	MA165TA5VT	DIODE
D501	FR154-T	DIODE
D503	ES01FV0-H	DIODE
D504	ES01FV0-H	DIODE
D505	MA165TA5VT	DIODE
D506	MA4150MTA	DIODE
△ D801	D3SB40	DIODE
D805	L-53HD	LED
D805	TKK4C0034	LED HOUSING
	I.C	
IC501	UPC1379C	IC (16 PIN)
IC801	M5237L	IC (3 PIN)
	COILS	
L401	TLT470K186T	COIL
△ L501	TLH4C60726Y	WIDTH COIL
L502	TLH4C60620Y	H. LINEARITY COIL
L505	TLT056K109	PEAKING COIL
	TRANSISTORS	
Q301	2SD636-QRS	TRANSISTOR
Q302	2SD636-QRS	TRANSISTOR
Q303	2SB641-QRS	TRANSISTOR
Q304	2SB641-QRS	TRANSISTOR
Q305	2SB641-QRS	TRANSISTOR
Q306	2SB641-QRS	TRANSISTOR
Q307	2SD636-QRS	TRANSISTOR
Q308	2SD636-QRS	TRANSISTOR
Q309	2SC2258	TRANSISTOR
Q501	2SC1384QR	TRANSISTOR
Q502	2SD1274B	TRANSISTOR (D1274B)
Q503	2SC3311AQRTA	TRANSISTOR
Q504	2SC1740STPS	TRANSISTOR
Q801	2SB1299	TRANSISTOR

REF. NO.	PART NO.	DESCRIPTION
	RESISTORS	
R301	ERDS2TJ750TD	C 75 Ω J 1/4W
R302	ERDS2TJ101TD	C 100 Ω J 1/4W
R303	ERDS2TJ223TD	C 22KΩ J 1/4W
R304	ERDS2TJ223TD	C 22KΩ J 1/4W
R305	ERDS2TJ102TD	C 1KΩ J 1/4W
R306	ERDS2TJ121TD	C 120 Ω J 1/4W
R307	ERDS2TJ103TD	C 10KΩ J 1/4W
R308	ERDS2TJ101TD	C 100 Ω J 1/4W
R310	ERDS2TJ431TD	C 430 Ω J 1/4W
R311	ERDS2TJ273TD	C 27KΩ J 1/4W
R312	ERDS2TJ221TD	C 220 Ω J 1/4W
R313	ERDS2TJ471TD	C 470 Ω J 1/4W
R314	ERDS2TJ182TD	C 1.8KΩ J 1/4W
R315	ERDS2TJ104TD	C 100KΩ J 1/4W
R316	ERDS2TJ471TD	C 470 Ω J 1/4W
R317	ERDS2TJ222TD	C 2.2KΩ J 1/4W
R318	ERDS2TJ154TD	C 150KΩ J 1/4W
R319	ERDS2TJ223TD	C 22KΩ J 1/4W
R320	ERDS2TJ102TD	C 1KΩ J 1/4W
R321	ERDS2TJ103TD	C 10KΩ J 1/4W
R322	ERDS2TJ122TD	C 1.2KΩ J 1/4W
R323	ERDS2TJ271TD	C 270 Ω J 1/4W
R324	ERDS2TJ820TD	C 82 Ω J 1/4W
R326	ERDS2TJ102TD	C 1KΩ J 1/4W
R328	ERDS2TJ822TD	C 8.2KΩ J 1/4W
R329	ERDS2TJ562TD	C 5.6KΩ J 1/4W
R330	ERDS2TJ560TD	C 56 Ω J 1/4W
R333	ERG2SJ392H	M 3.9KΩ J 2W
R334	ERDS2TJ221TD	C 220 Ω J 1/4W
R335	ERDS2TJ113TD	C 11KΩ J 1/4W
R336	ERDS2TJ392TD	C 3.9KΩ J 1/4W
R401	ERDS2TJ392TD	C 3.9KΩ J 1/4W
R402	ERDS2TJ122TD	C 1.2KΩ J 1/4W
R403	EROS2TKF9091K	M 9.09KΩ F 1/4W
R406	ERDS2TJ103TD	C 10KΩ J 1/4W
R407	ERDS2TJ273TD	C 27KΩ J 1/4W
R409	ERDS2TJ821TD	C 820 Ω J 1/4W
R410	ERDS2TJ392TD	C 3.9KΩ J 1/4W
R411	ERDS2TJ562TD	C 5.6KΩ J 1/4W
R413	ERX3SJ1R8H	M 1.8 Ω J 3W
R415	ERDS2TJ222TD	C 2.2KΩ J 1/4W
R416	ERDS2TJ103TD	C 10KΩ J 1/4W
R418	ERDS1TJ561TD	C 560 Ω J 1/2W
R419	ERDS2TJ563TD	C 56KΩ J 1/4W
R421	ERDS2TJ332TD	C 3.3KΩ J 1/4W
R422	ERDS2TJ391TD	C 390 Ω J 1/4W
R423	ERDS2TJ393TD	C 39KΩ J 1/4W
R501	ERDS2TJ473TD	C 47KΩ J 1/4W
R502	ERDS2TJ562TD	C 5.6KΩ J 1/4W
R503	ERDS2TJ681TD	C 680 Ω J 1/4W
R504	ERDS2TJ333TD	C 33KΩ J 1/4W
R505	EROS2TKF2001K	M 2KΩ F 1/4W
R507	EROS2TKF9311K	M 9.31KΩ F 1/4W
R508	ERDS1TJ391TD	C 390 Ω J 1/2W

REF. NO.	PART NO.	DESCRIPTION
R509	ERDS2TJ271TD	C 270 Ω J 1/4W
R511	ERX3SJ8R2H	M 8.2 Ω J 3W
R512	ERX3SJ6R8H	M 6.8 Ω J 3W
R514	ERDS2TJ473TD	C 47KΩ J 1/4W
R516	ERDS2TJ122TD	C 1.2KΩ J 1/4W
R517	ERDS2TJ682TD	C 6.8KΩ J 1/4W
R520	ERQ12HJ120P	F 12 Ω J 1/2W
R525	ERG1SJ390P	M 39 Ω J 1W
R527	ERDS2TJ101TD	C 100 Ω J 1/4W
R530	ERDS2TJ563TD	C 56KΩ J 1/4W
R551	ERDS2TJ153TD	C 15KΩ J 1/4W
R552	ERDS2TJ680TD	C 68 Ω J 1/4W
R601	ERDS2TJ104TD	C 100KΩ J 1/4W
R602	ERDS2TJ684TD	C 680KΩ J 1/4W
R603	ERDS1TJ824TD	C 820KΩ J 1/2W
R604	ERDS1TJ684TD	C 680KΩ J 1/2W
R605	ERDS1TJ394TD	C 390KΩ J 1/2W
R606	ERDS2TJ274TD	C 270KΩ J 1/4W
R607	ERDS2TJ105TD	C 1MΩ J 1/4W
R608	ERDS2TJ102TD	C 1KΩ J 1/4W
R801	ERDS2TJ181TD	C 180 Ω J 1/4W
R802	ERDS2TJ471TD	C 470 Ω J 1/4W
R803	ERDS2TJ153TD	C 15KΩ J 1/4W
R804	EROS2TKF3652K	M 36.5KΩ F 1/4W
R805	EROS2TKF4121K	M 4.12KΩ F 1/4W
R807	ERDS2TJ152TD	C 1.5KΩ J 1/4W
	TRANSFORMERS	
△ T501	TLH80410	H. DRIVE TRANS.
△ T502	TLF4C60818N	FLYBACK TRANS.
	VARIABLE RES.	
VR301	EVUE2AS25B13F	CONTRAST 1KΩ B
VR302	EVUE2AS25B13F	BRIGHTNESS 1KΩ B
VR401	EVUE2AS25B14F	V-HOLD 10KΩ B
VR408	TAV1028B501	V.SIZE 500 Ω B
VR412	TAV1028B502	V.LIN 5KΩ B
VR501	EVUE2AS25B14F	H-HOLD 10KΩ B
VR515	TAV1028B103	H.PRESET 10KΩ B
VR601	EVMJ6U10KB26	FOCUS 2MΩ B
VR602	TAV1028B104	SUB BRIGHT 100KΩ B

REF. NO.	PART NO.	DESCRIPTION
	OTHERS	
△ CN301	HXC033001210	BNC CONNECTOR
△ CN302	HXC033001210	BNC CONNECTOR
CN304	TXAJT5P1990	5P CONNECTOR
CN501	TJS7551-04J	4P BASE
△ CN601	TJS25640V	CRT SOCKET
CN602	TJS878204	4P BASE
CN803	TJS0861-06N2S	6P BASE
E601	TXAJT1P1990	1P TERMINAL WIRE
△ F801	XBA1C06NU100	AC FUSE 630mA 125V
FS1	SN5057	FUSE HOLDER
FS2	SN5057	FUSE HOLDER
JP501	TXAJT1P2990	1P TERMINAL WIRE
SG1	TXAJT1P3990	1P TERMINAL WIRE
△ SW801	TSE4C69407	POWER SW. SDLB1PA 250V 5A
	TUC4C0043-8	HEAT SINK
	TUC4C0108	HEAT SINK
	TXAJT4P1990	4P CONNECTOR
	XTV3+10C	SCREW
	XWGT40660	WASHER